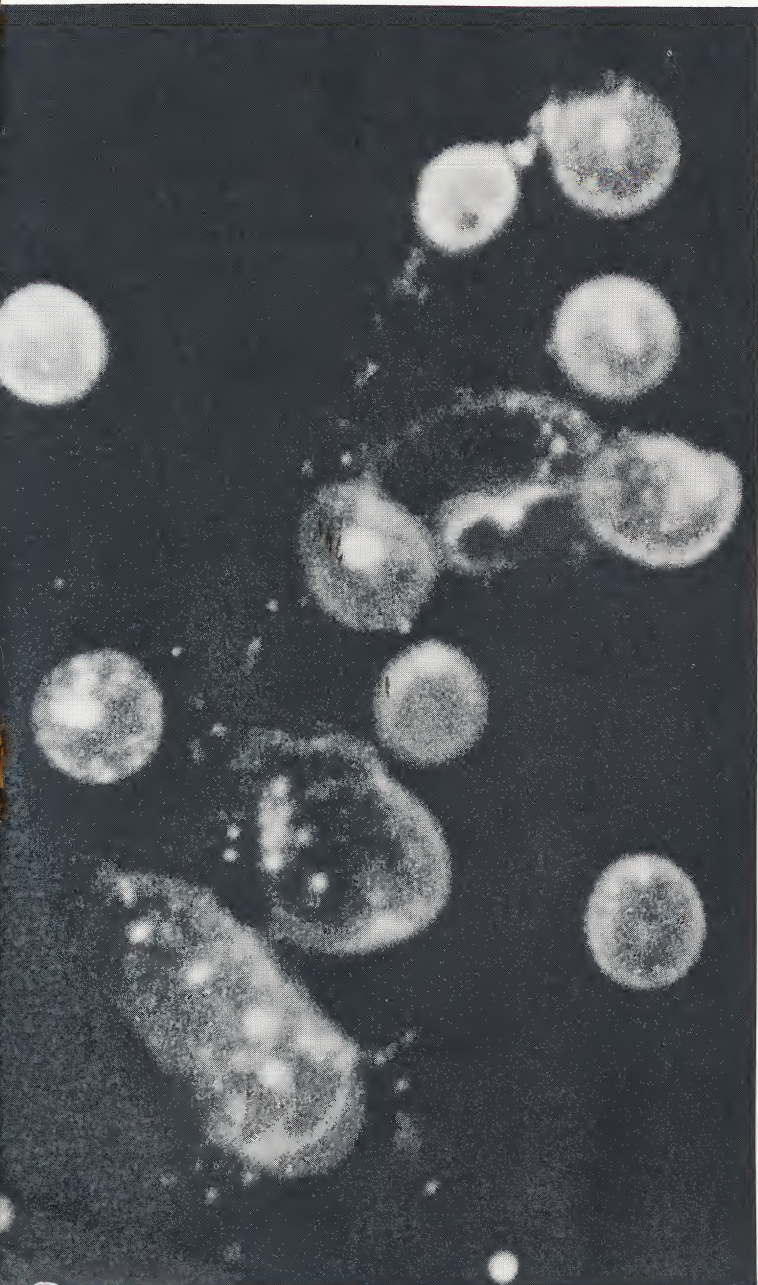


Red Lake

SUMMER 1966

VOLUME 1

NUMBER 1



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RED LAKE RECORDER

Volume 1

Summer 1966

Number 1

PUBLISHED QUARTERLY BY RED LAKE LABORATORIES INC.

coming events

PHOTO-INSTRUMENTATION MEETINGS

July 25-29—**Massachusetts Institute of Technology (MIT)**. Seminar on Scientific and Engineering Uses of High-Speed Photographic Measurement Techniques. Details from MIT, Room E19-356, Cambridge, Mass. 02139.

August 7-11 — **Professional Photographers of America (PPA)**. Annual Conference, Conrad Hilton Hotel, Chicago, Illinois. See **Red Lake** in Booth 123.

August 22-26—**Society of Photo-Optical Instrumentation Engineers (SPIE)**. Eleventh SPIE Technical Symposium, Chase Hotel, St. Louis, Missouri. See us in Booth 27.

Presentations for the Technical Program are being solicited. Contact Robert D. Shoberg, Session Chairman, High-Speed Photography, Red Lake Labs, 2971 Corvin Drive, Santa Clara, Calif.

October 2-7—**Society of Motion Picture and Television Engineers (SMPTE)**. Ambassador Hotel, Los Angeles, Calif. See us at the **Red Lake Booth**.

October 10-11—**Society of Photo-Optical Instrumentation Engineers (SPIE)**. Conference on Underwater Photo-Optics, Santa Barbara, Calif. See the **Red Lake** exhibit.

about Red Lake labs

EIGHT YEARS OLD

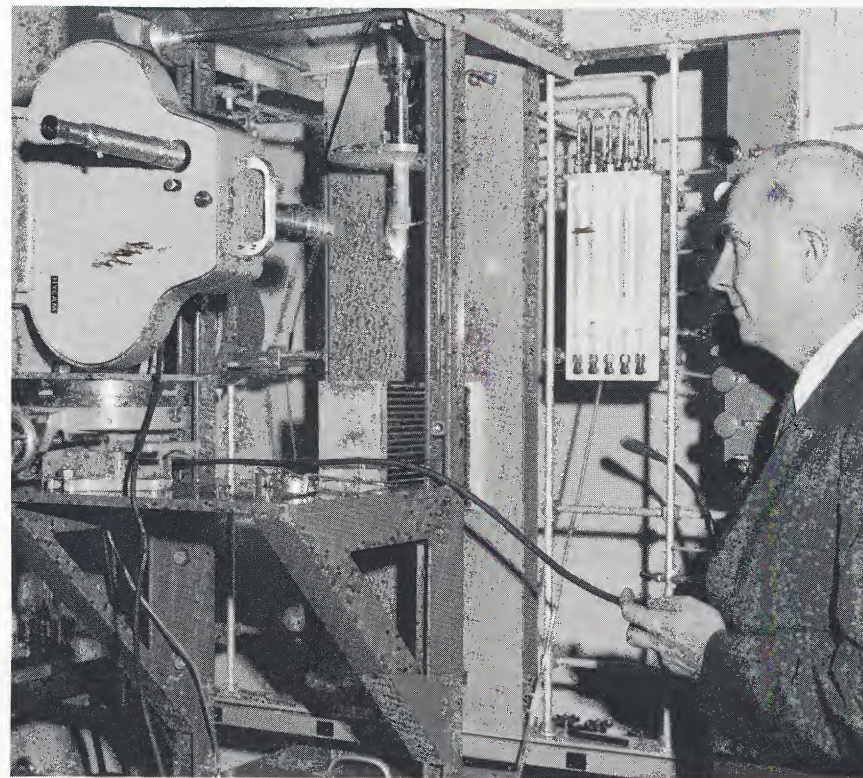
Red Lake Laboratories was formed in 1958 and incorporated in California in 1961. Both the company name and the trademark or logotype used for identification were derived from Founder Bob Shoberg's favorite fishing spot in Minnesota. Despite its double-barrelled appearance, Red Lake is a single body of water located about 35 miles south of the Canadian border and Lake of the Woods, in Indian country.

Joining Shoberg as a co-founder of the company and member of the first board of directors was Elmer Larsen, vice president. In 1962, Ernest M. Whitley, one of the co-founders of Beckman & Whitley and a pioneer in ultra-high-speed photography, left his current employment at Shockley Transistor Corp. after several years of being away from the photo-instrumentation field, and joined Red Lake as director of engineering and secretary-treasurer.

The first Hycam Camera was introduced at the SPIE Exhiborama in August, 1962. It was an advanced new concept in high-speed rotating-prism cameras—the joint conception of A. Kent Boyd and Shoberg.

Prior to this collaboration, Shoberg

(Continued on page 4)



CHARLES M. DREW, NOTS, CHINA LAKE, CALIF., WITH HYCAM SETUP

Hycam application

ALUMINUM COMBUSTION

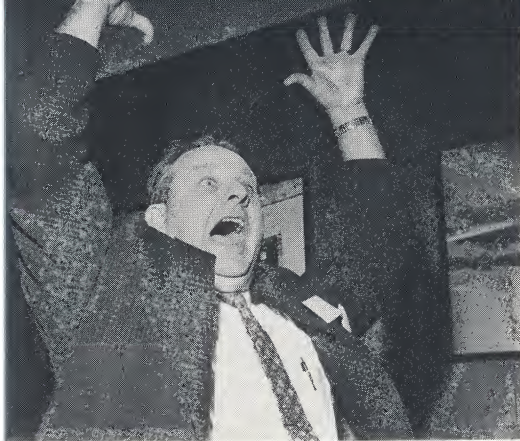
Shown on the cover is a Hycam photo of burning aluminum particles, captured on film as they impinge on a microscope slide. The grainy-looking shapes are actually clouds of combustion particles vaporized off the main particles. Burning occurs on the surface of each of these sub-particles.

The scientific investigation that produced these pictures is being performed by Charles M. Drew, a chemist in the Chemical Kinetics Branch of the Research Department at the Naval Ordnance Test Station, China Lake, California. Drew is shown in the accompanying photo, a view of the physical setup of the experiments. The Hycam Camera can be seen at the upper left,

with its objective lens trained on a microscope slide located directly under the flame toward the rear of the equipment array.

As he describes the procedure, the pictures are taken of nominal 100-micron-diameter aluminum particles falling downward through a burner flame of an approximately stoichiometric mixture of carbon monoxide and oxygen burning at atmospheric pressure and exposed to air. "The aluminum particles are carefully sized spherical material of 99.999 per cent purity and the flame temperature is approximately 3200 K. Since the flame is essentially nonradiating, it does not show in the high-speed film. The particles, however, produce a condensed-phase product whose boiling point limits the aluminum flame tem-

(Continued on page 5)



RED LAKE PRESIDENT ROBERT D. SHOBERG CAUGHT IN A MOMENT OF QUIET REFLECTION

more history

(Continued from page 2)

had been chief of the photo branch at the White Sands Proving Grounds, manager of the Fastax Division of Wollensak Optical Co., and manager of the Camera Products Department at Beckman & Whitley. Boyd is not directly associated with the company, but is a designer of automation equipment for the semiconductor industry.

Hycam was brought to commercial reality by the Shoberg-Whitley-Larsen triumvirate who developed the refinements that add to its stature as the outstanding camera it is today. These include the detachable optical head, the clutching arrangements, the film-spool ejectors, and so forth.

The Boyd-Shoberg single-shaft idea was directed primarily at the elimination of gearing with both its inherent expense and its bothersome backlash. It has successfully accomplished just that, producing the industry's greatest range of speeds, best resolution, steady picture, and lowest price.

As we go to press, assurance has been received from the United States Patent Office of the impending grant of 23 patent claims on the advanced design of Hycam — mainly based on the single-shaft configuration of prism, shutter, and sprocket.

Shoberg strikes again

BOB'S CORNER

This is the first issue of a little publication we hope to get out fairly regularly to keep you posted on new and interesting photo-instrumentation items.

Hycam has had a lot to do with current progress in photo instrumentation. At the time of its first introduction, it was the most advanced of the high-speed rotating-prism cameras and in the short period of three years, it has established itself as the sales leader, just as it should have.

However, improvements continue in the basic camera, in the new models for greater capacity or special functions, and in the auxiliaries and accessories available to expand its usefulness.

The **Red Lake Recorder** is designed to keep you informed on these advances and also to serve as a sort of trading post where various users of Hycam can exchange information about applications. Your participation and comments will be most helpful.

Have you seen our film? It's a 15-minute presentation of Hycam including some quite interesting footage of Hycam-shot film.

If you'd like to schedule it for a meeting some time, get in touch with Duke Southard at Red Lake to reserve a booking. Of course, there isn't any charge.

One of the newest Hycam dealers is a man who would rather switch than fight. He is Charlie Jantzen of Photo Analysis in Wayne, New Jersey, covering New York, New Jersey, Pennsylvania, and Southern Connecticut. Charlie switched to Hycam when he found that all his prospects were listening patiently to his presentation of competitive cameras and then saying something like, "Yeah, yeah, but what about this new Hycam I keep hearing about?"

No black eyes on Charlie.

cover story

(Continued from page 3)

perature in the zone around the particle to 3800 K. The Al_2O_3 emits visible light as grey-body continuum, thus we have ample radiation for quite high filming rates.

"It is possible to discern the unconsumed particle and distinguish it from ejected bits of oxide. The parent particle is at the approximate geometric center of the head of the comet-like trail. Bright luminous objects leave this region; they are hot oxide accumulations which are shed from the original mass. (The parent mass is limited in temperature to the metal boiling point of approximately 2000 K, so it emits feebly and barely registers at this camera speed and f stop.) They are bilobate in structure (a sphere with a lens cap of oxide attached). Growth of the oxide debris in the tail supports the theory that combustion of aluminum is a heterogeneous process between aluminum vapor and oxygen which combines upon the smoke cloud and sheds excess enthalpy of reaction primarily through radiation loss. Thus radiation loss is a rate-limiting feature.

"Our use of your Hycam Camera consists essentially of high-speed cinematography. We are watching



CHARLIE JANTZEN BACHRACH PHOTO

particles of microscopic size with considerable magnification. We are seeing them by their own radiation, and we are working with extremely narrow limits of effective depth of field and viewing distance. Amplification of image size also results in amplification of motion, thus camera speed is of vital importance. The last 100 feet of this film was approximately 9,500 frames per second using a 1/2.5 shutter with a 4-in. lens set at f/5.6, and using a 3-in. extension tube. This work represents the finest motion pictures yet obtained (to our knowledge) of this most intriguing phenomenon by anyone.

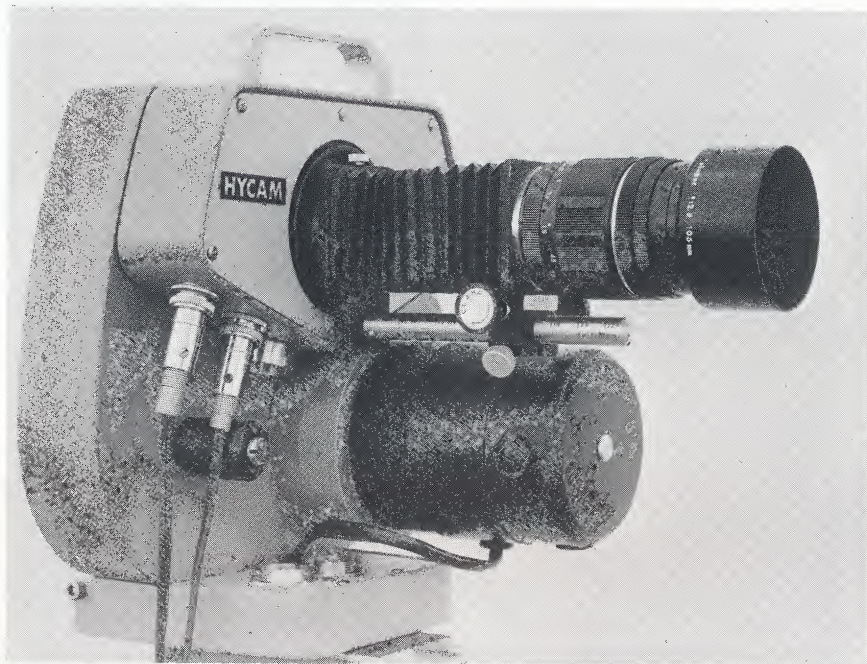
"The keen interest you and your staff have shown is deeply appreciated. It is a very comforting and refreshing feeling to have a fine piece of equipment backed up by an aggressive organization that will make certain that satisfactory performance is obtained. You have been most helpful in this regard, and you have broadened my own personal knowledge in the field of high-speed photography significantly."

stock deliveries

YOUR FILM PROCUREMENT

Planning to solve the problems of both routine and emergency film supply, Red Lake Laboratories has arranged a special dealership with Eastman Kodak Company. Under the arrangement, Red Lake will make available a full line of 16-, 35-, and 70-mm photo-instrumentation films in normal as well as special emulsions for immediate off-the-shelf delivery.

Plans now under way will lead to the establishment of stocking depots at various points throughout the United States. Each of these depots will cater to the particular needs of photo-instrumentation users in its area by maintaining appropriate stocks to meet their continuing needs. Although no overseas depots are envisioned at this time, nevertheless, users abroad will receive similar services from U. S. locations.



HUNDRED-FOOT HYCAM WITH MODEL RLLBXT-1 BELLOWS EXTENSION. UNIT FITS ANY HYCAM MODEL

product capsule

MACROPHOTOGRAPHY AID

One of the many auxiliary items available from Red Lake Labs to make high-speed photography more effective and more convenient is the Model RLLBXT-1 Bellows Extension shown here.

Continuously variable with five inches of motion, this aid to close-up work has C-mount fittings. Combined with suitable lens adapters, also available from Red Lake, it will accommodate practically any lens known to the photographic art.

The price: a modest \$48.

board of directors

NEW MEMBERS

James W. Stoneburner and William G. Hyzer have been elected recently to the board of directors of Red Lake Laboratories. Stoneburner, who joined the company early this year as treasurer and assistant secretary, was formerly business manager for the San Francisco publishing firm of W. H. Freeman & Co. Prior to that he was an accountant in the San Francisco office of Farquhar &

Heimbucher, CPA's. He is a graduate of San Jose State College, a member of the Administrative Management Society, and treasurer of its San Francisco chapter.

Hyzer, who is a widely known consulting research engineer, specializes in high-speed photo instrumentation. In addition to joining the Red Lake board, he has recently been in the news by having been named by SMPTE to the position of vice president for instrumentation and high-speed photography.

optical advance

MORE LIGHT

By the use of optical elements having a new type of anti-reflection coating, Red Lake engineers have improved light transmission through Hycam by as much as a stop and three quarters while, at the same time, significantly improving color balance for color film and resolution for black and white. The new coating, a product of Optical Coating Laboratories, Inc., is termed HEA. Hycam Cameras having HEA-coated optics will be identified by the new model designation K3, replacing the former K2. List price increase will be \$50.

Because HEA transmits almost all of the visible spectrum, the new optics in K3 Hycam models give far superior color balance for color film and also more contrast and better resolution for black-and-white films.

Including minor physical changes per-

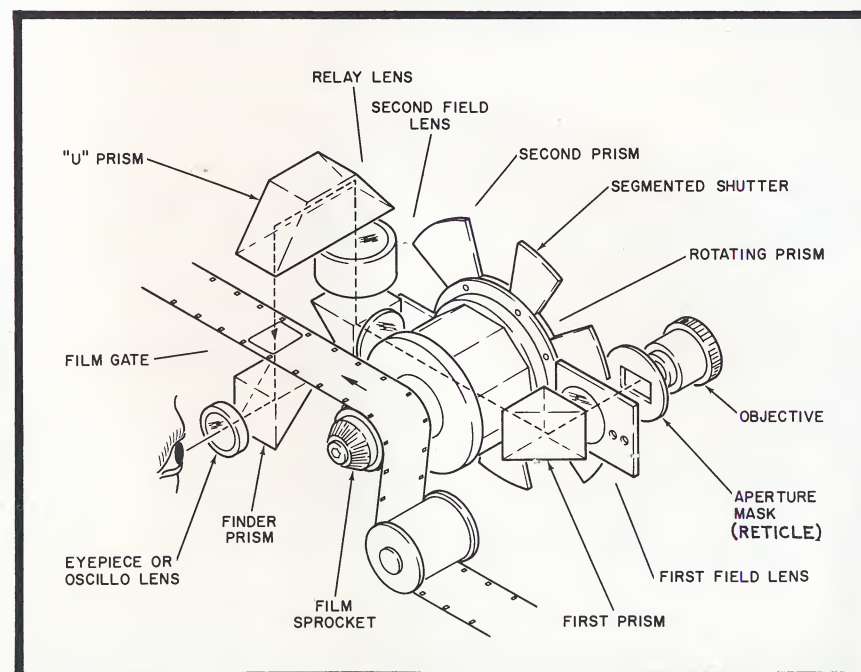
mitted by the new coating, the light improvement at the film in K3 Hycam models is as follows: At $f/2-1\frac{3}{4}$ stops, at $f/2.8-1$ stop, and at $f/4-3\frac{3}{4}$ stop. Model K1 and K2 Hycams now in the field can be factory converted to K3 for \$300.

As things now stand, if true exposure should be $f/2.0$ and a scene is shot with Hycam having K3 optics, it will be underexposed by $1/3$ of a stop. At all other f stops, underexposure will be $1/10$ of a stop.

Red Lake Labs has made extensive tests and experiments with HEA and has found it to be far superior to the normal magnesium-fluoride type of coating. In making the change from K2 to K3 optics, it is felt that an outstandingly important advance is being accomplished for Hycam users.

As a pioneer American automobile maker always used to say, 'Constant improvement but no yearly models.'

DIAGRAM OF HYCAM OPTICS. WITH NEW K3 SYSTEM, ALL INTERNAL OPTICS ARE HEA-COATED



MAY WE HAVE YOUR CORRECT ADDRESS?

Name _____

Title _____

Company _____

Address _____

_____ Zip _____

Please send data on Hycam Cameras ☐ Timing
Light Generators ☐ Pin-Registered High-Speed
Cameras ☐. Please have a Red Lake Repre-
sentative call ☐.

Others who should receive the Red Lake Recorder

product capsule

FLASH UNITS

In a move to expand the availability of specialized accessory equipment for Hycam photography, Red Lake has concluded arrangements with Edgerton, Germeshausen & Grier, Inc., for the distribution of their stroboscopic and electronic flash units.

Equipment available includes: The EG&G Model 501 High-Speed Stroboscope, designed to produce flashes of light at rates up to 6000 cps with a minimum flash duration of 1.2 μ sec.

The EG&G Model 502 Multiple Microflash, which provides up to 15 1-microsecond light pulses at controlled pulse intervals, permitting 15 exposures at known time intervals.

The EG&G Model 549 Microflash® System, which provides an energy output of 6.5 watt-seconds with an adjustable time delay from approximately 3 to approximately 1000 microseconds, and a peak light output of 50×10^6 beam candelas. Black and white photographs can be taken at f/8 on Panatomic-X film with a lamp-to-subject distance of two feet.

product capsule

PROJECTION EQUIPMENT

Red Lake has concluded arrangements with L-W Photo Inc. of Van Nuys, California, to provide dealership for the new L-W Photo-Optical Data Analyzer. The unit is available in two models: Model 224A for full-frame 16-mm operation and Model 224A $\frac{1}{2}$ for half-frame.

This photo-instrumentation projector features complete flicker-free projection at speeds of 1, 2, 4, 6, 8, 12, 16, and 24 frames per second forward or reverse, with instantaneous stop while projecting at any speed, instant change of direction at all speeds, and positive single-frame indexing so that the projector always stops with the shutter open.

Other features of the L-W Analyzer include a built-in intervalometer, an equally brilliant picture in cine or still modes, a digital frame counter, and 400-ft and 2000-ft film capacity. The unit has a daylight-projection viewing screen built into its carrying case.

Let us send you more information.

Red Lake Labs, Inc.

PHOTO INSTRUMENTATION EQUIPMENT

Products the User Likes

2971 CORVIN DRIVE

KIFER INDUSTRIAL PARK

SANTA CLARA, CALIFORNIA 95051 (408)-739-1698

RED LAKE PRODUCTS are sold through dealers and factory branches in most of the technical areas of the world. If you require assistance, ask us for the location of your nearest office.

FIRST CLASS

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